Solving the DER Interoperability Challenge:

A QualityLogic Perspective

QualityLogic

© MARCH 2020, QUALITYLOGIC, INC

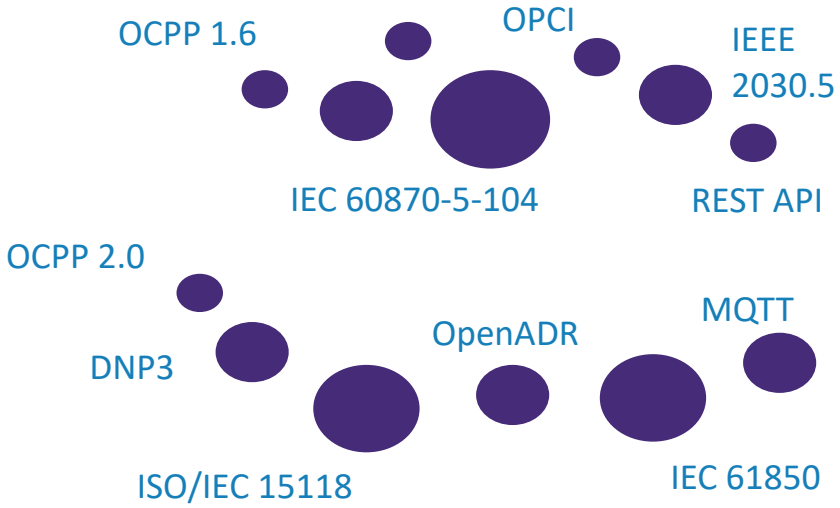
Agenda

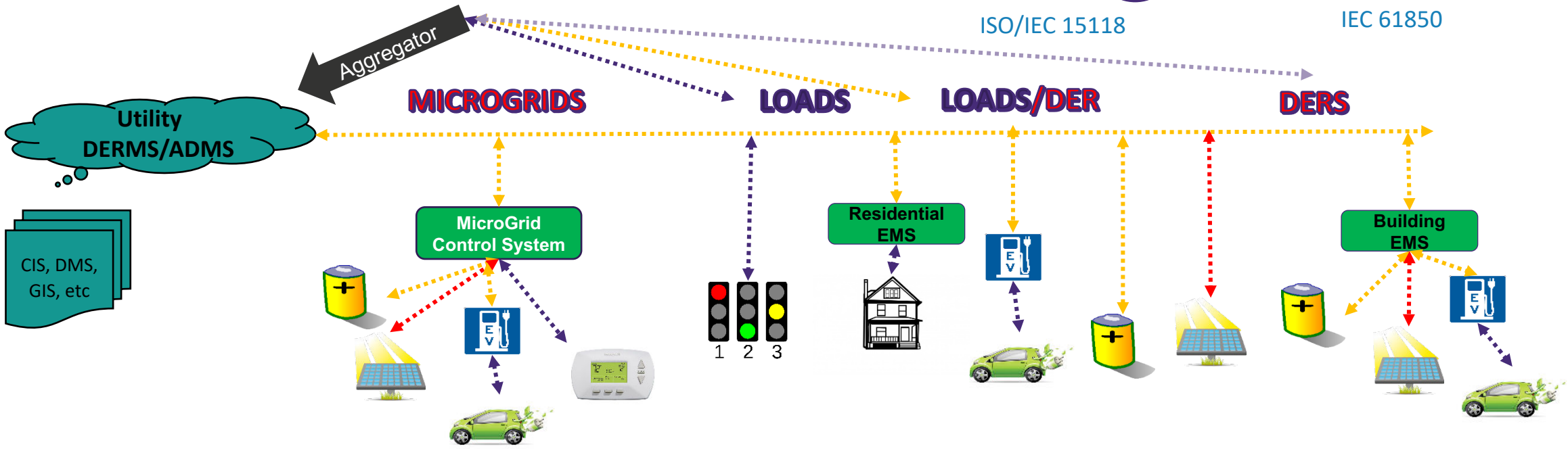
- Challenges in DER Interoperability
  - Understanding and selecting Protocols
  - Accelerating Adoption of Standard Protocols
  - Interoperability using Standard Protocols
  - Making sure products work and Interoperate
- QL Observations and Solutions
  - Education and information
  - Enabling and Supporting Adoption
  - Accelerating Interoperability
  - Accelerating Product Quality
- Summary

QualityLogic

Challenge 1: Which Protocol?

- **Evolving DER complexity, quantities and use cases**
- **How do you choose the right communications protocol?**



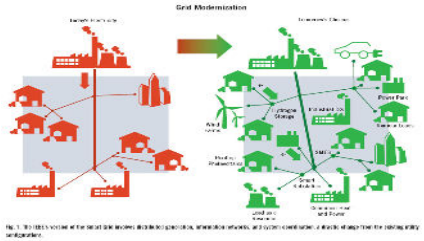


QualityLogic

© MARCH 2020, QUALITYLOGIC, INC

Challenge2: Adoption of Standards

Missing Mandates



Utility Requirements

Our Solution is the BEST!! It is all you need

Proprietary Solutions

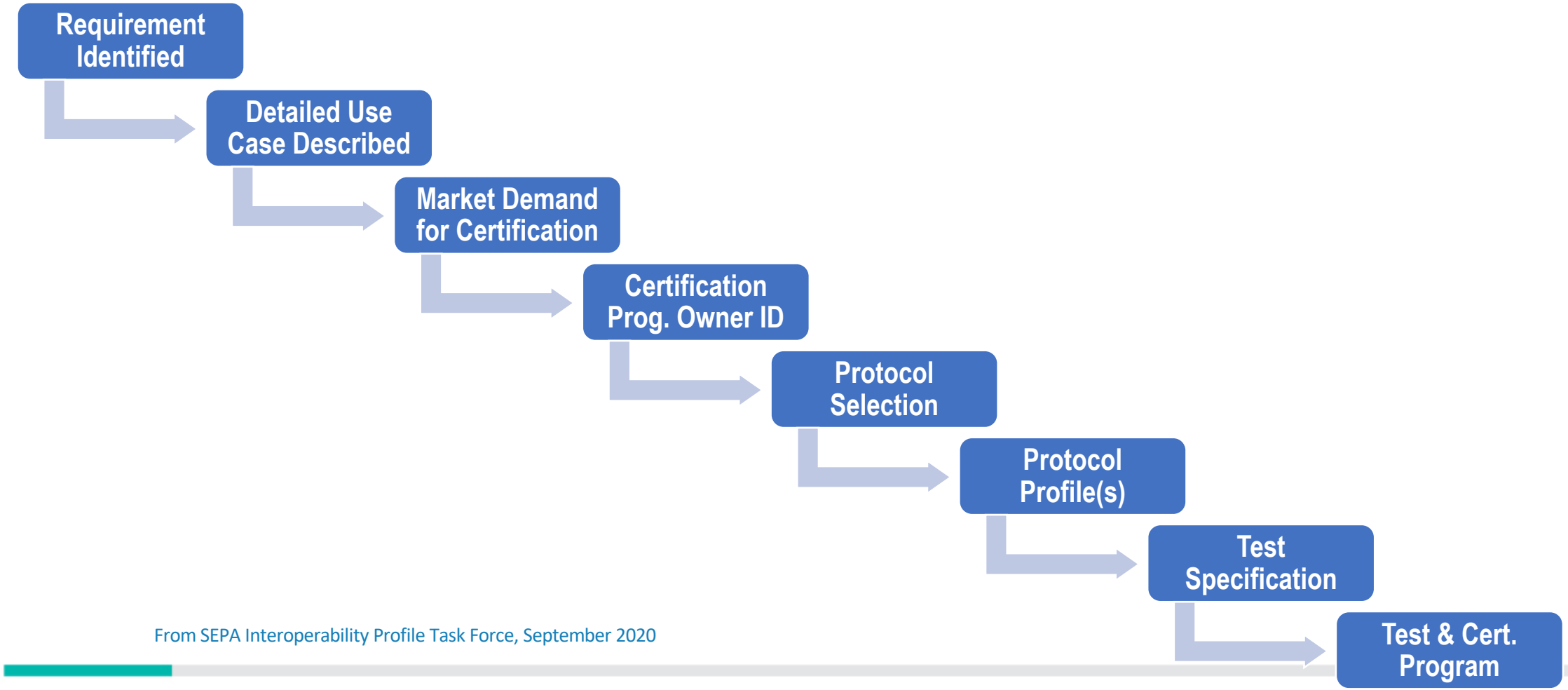
Protocol	Protocol	Protocol
OpenADR 2.0	OCHP (EV)	Open SG Protocol
IEEE 2030.5 (1547)	OCPI (EV)	TeMIX
IEC 61850-8-2	OCPP (EV)	CTA 2045
DNP3 (1547)	OICP (EV)	ETSI TS 104.001
SunSpec (1547)	OSCP (EV)	FAN USEF
MESA	Green Button	ASHRAE 201/2030.5
IEC 61850-90-8	Orange Button	PowerMatcher
ISO/IEC 15118	OpenFMB	
eMIP (EV)	IEC 61850-4-720	

Competing Standards/ Lack of Knowledge

Implementation (In)experience

© MARCH 2020, QUALITYLOGIC, INC

Challenge 3: Achieving Interoperability



From SEPA Interoperability Profile Task Force, September 2020

© MARCH 2020, QUALITYLOGIC, INC

Challenge 4: Product Quality

- **Standards are great but the product still has to work – flawlessly and successfully**
- **Requires great specifications, development and testing, testing, testing**

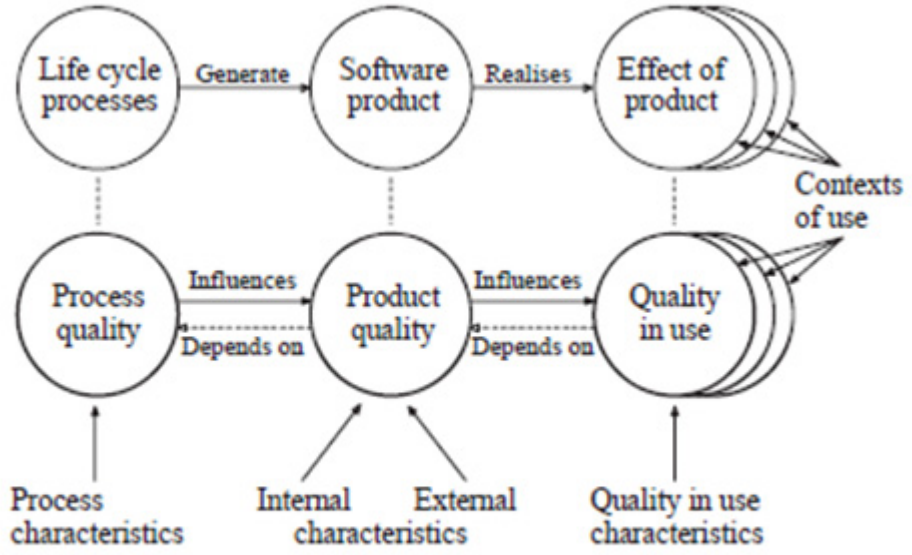
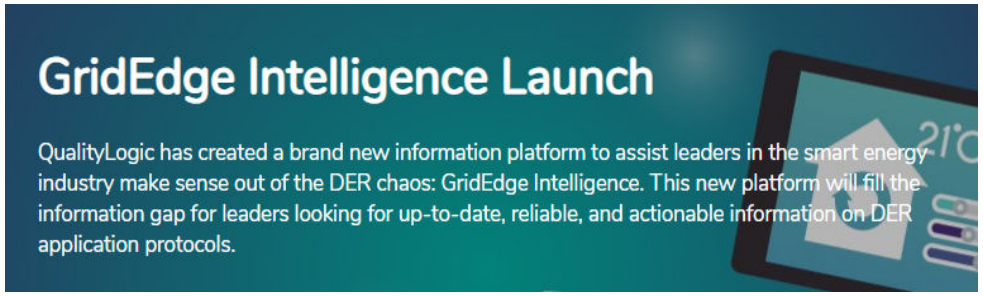


FIGURE 1 : PROCESS AND PRODUCT ORIENTED SOFTWARE QUALITY

© MARCH 2020, QUALITYLOGIC, INC

Challenge 1: QualityLogic Protocol Selection Assistance



https://www.gridedgeintelligence.com/

© MARCH 2020, QUALITYLOGIC, INC

Challenge 2: Promoting Standards

UL 1741
UL 3001

SAE J3072 V2G

OpenADR 2.0a/b Profiles
Draft DER Profile
OpenADR Technical Workshop

IEEE 2030.5 WG
IEEE 1547.1
IEEE 1547.2

IEEE 2030.5 Open Source
CSI4 Smart Inverter Demo

CSIP Test Specification
Profile Working Group

SIWG
Microgrid Rulemaking

IEEE 2030.5 Open Source
CSI4 Smart Inverter Demo

UU102: Intro to Standard
Comm Protocols 2018

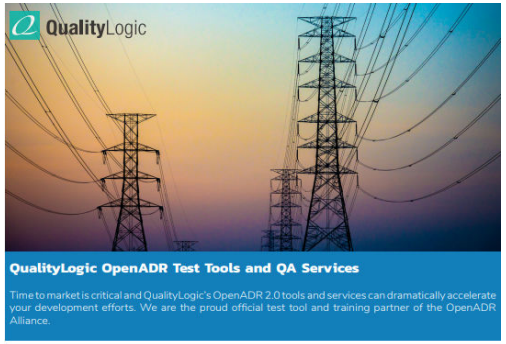
Decision Maker's Interoperability Checklist
Decision Maker's Transactive Energy Checklist
Interoperability Maturity Model

© MARCH 2020, QUALITYLOGIC, INC

Challenge 3: Enabling Interoperability

- **OpenADR and IEEE 2030.5 Developer and Implementer Training – hundreds trained globally**
- **OpenADR and IEEE 2030.5 Test and Certification tools**
  - Official OpenADR Certification Test Harness
  - Approved IEEE 2030.5 Test SW Vendor for SunSpec
- **Introducing IEEE 1547.1 Interop Conformance Test Tool**
- **Advising utilities and vendors on specific application profiles to enable interoperable eco-systems**

https://www.qualitylogic.com/what-we-test/smart-energy-standards/ieee-2030-5-test-tools-qa-services/



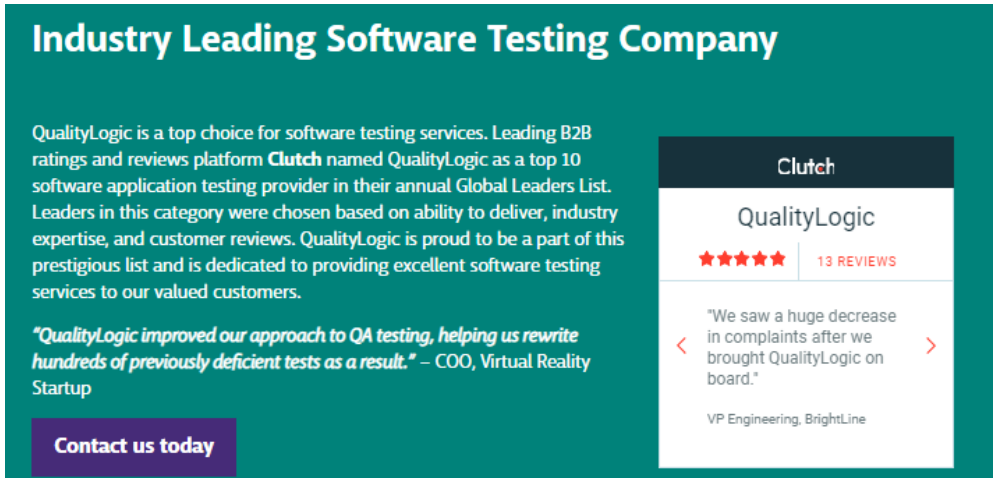
https://www.qualitylogic.com/what-we-test/smart-energy-standards/openadr-2-test-tools-and-qa-services/

https://qualitylogic.thinkific.com/

© MARCH 2020, QUALITYLOGIC, INC

Challenge 4: Good Stuff, On Time and Budget

- **Founded in 1986 with Labs in Boise and OK**
- **Software/firmware QA for hundreds of companies such as HP, Microsoft, Disney, Cisco, Adobe, etc**
- **Expertise in test planning, test case development, manual and automated test execution**



https://www.qualitylogic.com/

© MARCH 2020, QUALITYLOGIC, INC

For more information

- **Publications** – https://www.qualitylogic.com/knowledge-center/content-library/
- **IEEE 2030.5 Training** – https://www.qualitylogic.com/training/ieee-2030-5-der-workshop/
- **OpenADR Training** – https://www.qualitylogic.com/training/openadr-training-workshop/
- **Online Training** – https://qualitylogic.thinkific.com/
- **IEEE 2030.5 Tools** – https://www.qualitylogic.com/what-we-test/smart-energy-standards/ieee-2030-5-test-tools-qa-services/
- **OpenADR Test Tools** – https://www.qualitylogic.com/what-we-test/smart-energy-standards/openadr-2-test-tools-and-qa-services/
- **GridEdge Intelligence** – https://www.gridedgeintelligence.com/
- **Test Services** – https://www.qualitylogic.com/

© MARCH 2020, QUALITYLOGIC, INC